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ABSTRACT

An intervention to prepare children for pretrial interviews and testimony was tested. The goal of the intervention was to increase the completeness of young children's eyewitness accounts because their free recall is typically less complete than that of older children or adults. Seven- and 10-year-old children (N=132) were randomly assigned, within age groups, to one of three treatment conditions: (1) training with retrieval strategies using schema based categories and visual cues with practice, feedback, and self-monitoring; (2) instructions to be complete, but no strategy training; and (3) a control group receiving no instructions and no strategy training. The children participated in a staged event followed, 2 weeks later, by a 30 minute, individual training or control session. One day later, there was a booster session after which they were interviewed about the event with free and cued recall tasks. The results validated the assumption that the completeness of children's eyewitness accounts can be enhanced without the risk of an increased rate of error. Moreover, instructing children in this age range to be more complete was not effective. (A discussion focuses on implications for the forensic context, limits on generalization, and directions for future research.) (Author)

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Preparing Child Witnesses: The Efficacy of Memory Strategy Training

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Preparing Child Witnesses: The Efficacy of Memory Strategy Training

Abstract

An intervention to prepare children for pretrial interviews and testimony was tested. The goal of the intervention is to increase the completeness of young children's eyewitness accounts because their free recall is typically less complete than that of older children or adults. 132 children (half 7-year-olds and half 10-year-olds) were randomly assigned, within age group, to one of three treatment conditions: (A) Training with retrieval strategies using schema based categories and visual cues with practice, feedback, and self-monitoring; (B) Instructions to be complete, but no strategy training; and (C) Control group--no instructions and no strategy training.

Children participated in a staged event followed, two weeks later, by a half-hour, individual, training or control session. One day later, there was a booster session after which they were interviewed about the event with free and cued recall tasks.

Results validated the assumption that the completeness of children's eyewitness accounts can be enhanced without the risk of an increased rate of error. Moreover, instructing children in this age range to be more complete was not effective. Discussion focuses on implications for the forensic context, limits on generalization, and directions for future research.

Preparing Child Witnesses: The Efficacy of Retrieval Strategy Training

Historically, legal professionals and lay persons alike have been skeptical of children's testimony (Goodman, Golding and Haith, 1984; Myers, 1987). In part, this is because children were thought to have poorer memories than adults and be vulnerable to adult suggestion; but this is an incorrect overgeneralization.

Recent studies show young children are more suggestible only in certain situations regarding certain types of information, not others. Likewise, recent studies of memory development show that young children's free recall is less complete than that of older children or adults, but what they do report in free recall is quite accurate (Goodman & Reed, 1986; Melton, 1981; Saywitz, 1987). Incompleteness leads adults to ask leading questions to elicit additional information, especially about peripheral details. The result can be additional accurate information, but also an unintended increase in the number of frank errors (Loftus & Davies, 1984; Zaragoza, 1987).

The goal of the present study was to develop and test an intervention that takes advantage of children's strengths, namely high accuracy rates in free recall, and minimizes their weaknesses - their incompleteness. So we set out to increase the completeness of children's free recall, thereby reducing the number of leading questions needed and consequently, the risk of contaminating testimony with preconceived notions.

The present study is one of a series of experiments to develop and test methods for enhancing the competence of child witnesses by preparing them for the challenges they face as

participants in the legal system. Increased witness competence should aid the fact finding process. Moreover, positive effects could extend beyond the fact finding process. Increased preparation could lead to feelings of confidence and empowerment that might mitigate potential negative effects secondary to participation in the system (Goodman, Taub, Jones, England, Port, Rudy, & Prado, 1990).

There is an extensive experimental literature documenting the positive effects of preparation when children face unfamiliar and painful medical procedures that require their cooperation (Jay, 1984). In contrast, the literature on preparation of child witnesses is limited to anecdotal accounts and clinical suggestions. Few techniques have been empirically tested; hence, their apparent efficacy is unknown. Certainly, it would be premature to recommend untested techniques be used in ongoing court cases. There is a need for empirically based interventions, devoid of unintended side effects, that are developmentally sensitive and would not infringe on the rights of the accused.

The present intervention, devised within an information processing framework, assumes that metacognitive demands are placed on child witnesses that they are ill-equipped to meet. The intervention increases children's knowledge of what is expected of them and how to identify and cope with the problems that arise. The intervention is founded on the presumption that

children are not aware of the types of information or the level of detail required of them in forensic questioning.

The intervention is based on theories and studies of the development of retrieval strategies and narrative accounts. These studies suggest that external cues, categorization and metamemory strategies, when accompanied by a rationale for their use, aid children's retrieval (e.g., Bartlett, 1932; Fivush, Hudson & Nelson, 1984; Kobasigawa, 1974, 1977; Kurtz & Borkowski, 1984; Lodico & Ghatala, 1983; Pressley, Forrest-Pressley & Elliot-Faust, 1988; Pressley, Ross, Levin, & Ghatala, 1984; Ryan, Hegion, & Flavell, 1970; Smith, Ratner & Hobart, 1987). It is also based on schema theories that describe how children represent events in memory and studies of children's recall for stories constructed along story grammars (Nelson, Fivush, Hudson & Lucariello, 1983; Stein & Glenn, 1978). In brief, we train children to use external visual cues to remind them to report a level of detail modeled by the trainer, from categories of information that would be useful in a criminal investigation. The categories are a version of the Stein and Glenn story grammar and include the setting, participants, their conversations and affective states, actions, and consequences.

The training is based on Schneider and Pressley's (1989, pp. 121-160) model for a good memory strategy user (GMSU) in which the application of appropriate strategies to appropriate situations initially requires much conscious effort, but with

experience, becomes more automatic and habitual and is no longer as great a burden on operating space. In the training sessions, children practice using specific strategies to enhance completeness, with explicit feedback, working towards the goal of performing at this level more automatically and being able to apply the strategies to a variety of situations and across a number of contexts.

The completeness of these children's memories are compared to the memories a group who receives instructions to be complete, but no practice, modeling, feedback, or cuing. This group was included because researchers have found that instructing adults to be more complete during interviews increases completeness of adult reports (Geiselman, Fisher, MacKinnon & Holland 1985; Fisher, Geiselman, & Amador, 1989). Additionally, at times, simple recall instructions have been helpful even to preschoolers (Wellman, Fabricus & Wan, 1987; Wellman, Ritter & Flavell, 1975; Yussen, 1974). A control group who receives no instructions and no strategy training also is included to test the efficacy of the intervention.

Method

A preliminary study was conducted with 72 6-to-9 year olds to refine the staged event, intervention techniques, outcome measures and coding system (Saywitz & Lamphear, 1989).

In the present study, 132 children (65 7-to-8 year olds; 67 10-to-11 year olds) from the Los Angeles County public schools

participated. Within each age group, children were randomly assigned to one of the three treatment conditions shown in Table 1: (A) Training in retrieval strategies and self-monitoring with practice and explicit feedback, (B) Instructions to be complete without training in specific strategies, self-monitoring, practice or feedback, (C) Control group--no memory instructions and no strategy training.

Staged Event

All children participated in a classroom event designed to be rich in detail and action, as well as emotionally involving. Professional actors were hired to play student teachers from UCLA who took over the classroom for 30 minutes. They taught a history lesson and folk dance about Mexico. Midway through the event, a confederate teacher entered accusing one teacher of taking his materials without asking. She had already distributed the materials to the class who then became involved in the disagreement and its resolution. We believe the event was compelling to the children because in some classes children clapped when the disagreement was resolved, while in others they hid the materials under their desks during the disagreement.

Procedure

The staged event was videotaped each time it occurred. This is important to ensure that children's memories were compared to what actually happened, not what was supposed to have happened. Two weeks after the classroom event, researchers returned for a

45 minute individual session. First, research assistants administered the Peabody Picture Vocabulary Test-Revised and recall for a Stein and Glenn story (Judy's Birthday) that was read to the children. Then children participated in the training or control portion of the session which lasted approximately 30 minutes. Two days later, a booster session occurred, immediately followed by an interview about the classroom event.

Treatment Sessions

Table 1 displays components of the treatment or control sessions for all three groups. In the training sessions for Group A, task demands were made explicit and the children were given rationales for using specific strategies to learn the "best way" to report about past events. They watched short video tapes provided by the Children's Television Workshop and practiced recalling the videos using a set of schematic drawings to cue them to report a level of detail modeled by the trainer, about categories of information that would be meaningful in a criminal investigation. The visual cues were generic in character in order to be useful across different situations and avoid introducing bias. (See Figure 1.) Slight modifications in the pictures were necessary to accommodate developmental differences in understanding symbols. (See Figure 2.)

Children in Groups A and B were instructed to be complete, avoid guessing, report the beginning, middle and end of the event as well as any instance of novelty. While all groups watched

and recalled a similar set of short videos, only Group A practiced using self-monitoring techniques and visual cues with feedback. All children spent the same amount of time with the trainer prior to the interview involved with similar activities and materials.

Interview

The interview involved a free recall task: After children gave a narrative account, they were asked if they wanted to use the visual cues to help them remember additional information. After free recall, the cards were placed on the desks and were available for all subjects.

Coding

A propositional analysis of the scenario was conducted by two raters trained in the system developed by Walter Kintsch. The resulting 450 item checklist was used to score children's recall. The psychological reality of the items was validated by reference to the recall of 15 college students who viewed a videotape of the event. Children's responses were coded by two raters blind to cell assignment and the hypotheses of the study. Inter-rater reliability was high.

Results and Discussion

To insure comparability of groups on variables related to verbal recall, ANOVAs were performed on gender, scores on PPVT-R (a measure highly correlated with verbal intelligence), free recall for the Stein & Glenn story, and age within grade levels.

Prior to the intervention, the three groups did not differ on these variables, suggesting that potential treatment effects are more likely to be a function of the intervention than baseline verbal or memory skills, age or gender. Unless otherwise stated, remaining analyses involve data from free and/or cued recall analyzed in 3 X (Training condition) 2 (Age) X 2 (Sex) ANOVAs.

Total Recall

The number of propositions recalled correctly in free recall plus nonredundant additional information reported in cued recall (i.e., in response to the visual cues) was entered into the analysis. There was a significant main effect of training, F (2,120) = 18.83, $p < .0001$, and age, F (2,120) = 14.11, $p < .0003$. Post hoc Bonferroni T tests indicated that Group A, who received the complete training package, recalled significantly more correct propositions than either of the other two groups, who did not differ significantly from each other. Means and standard deviations appear in Table 2. Thus, the training was effective at increasing completeness of accurate recall. Moreover, merely instructing children to be complete was not associated with improvement.

When the number of propositions recalled incorrectly in free and cued recall was entered into the analysis, there was a significant main effect of training, F (2,120) = 9.91, $p < .0001$, with Group A recalling more items incorrectly. Since Group A's overall productivity was significantly larger than that of the

other two groups, F (2,120) = 19.36, $p < .0001$, $M_A = 26.34$; $M_B = 11.6$; $M_C = 15.22$, it is not surprising that they made a larger number of errors. To investigate this effect further, the proportion of propositions recalled incorrectly to the total number of propositions recalled was subjected to the analysis. The training groups did not differ significantly on error rates, $M_A = .06$; $M_B = .05$; $M_C = .03$. Accuracy rates were also calculated and analyzed; however, the training had no effect on accuracy, $M_A = .95$; $M_B = .95$; $M_C = .97$.

As expected, older children reported more correct facts than younger children and their total output was significantly larger than the younger children's F (1,120) = 11.30, $p < .001$, M 7-year-olds = 15.23; M 10-year-olds = 20.63. When the proportions correct and incorrect were entered into analyses, there were significant effects of age, with younger children having a slightly higher error rates, F (1,119) = 6.33, $p < .01$, M 7-year-olds = .06; M 10-year-olds = .03 and older children demonstrating significantly higher accuracy rates, M 7-year-olds = .94; M 10-year-olds = .97, albeit both were respectably high.

Further investigation of the data was necessary to better understand (1) the effects of the training on initial free recall, without the use of visual cues that might be difficult to implement in some situations, and (2) the effect of the visual cues at retrieval. Thus, the data from free and cued recall were analyzed separately as well.

Free Recall

When the number of propositions recalled correctly in free recall was entered into the analysis, main effects emerged for training group, F (2,120) = 9.13, $p < .0002$, and age F (1,120) = 29.94, $p < .0001$ There were no significant interactions. Bonferroni T tests suggested that Group A recalled significantly more propositions correctly than either of the other two groups, who did not differ significantly from each other. The means appear in Table 2. When the number of incorrectly recalled propositions was entered into the analysis, there were no significant main effects or interactions.[1] Thus, the training improved completeness of free recall even when the visual cues were not used and it did not increase the rate of error in free recall.

Cued Recall

When the number of additional nonredundant propositions correctly recalled in the cued recall task was analyzed, a significant main effect for training emerged, F (2,120) = 15.57, $p < .0001$. No other effects approached significance. Bonferroni T tests revealed that Group A recalled significantly more correct additional information than the other two groups who did not differ from each other.

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[1]We arbitrarily chose $p < .01$ as our criterion for reporting significance throughout this study. There was a marginal training X grade interaction F (2,120) = 3.54, $p < .03$.

When the number of incorrectly recalled propositions was entered into the analysis, a main effect of training arose F (2,120) = 9.90, $p < .0001$. Bonferroni T tests suggested that children in Group A recalled significantly more propositions incorrectly than children in the other two groups.[2] As could be expected, children in Group A also demonstrated significantly greater overall productivity in cued recall, F (2,120) = 16.07, $p < .0001$, $M_A = 8.6$; $M_B = 1.6$; $M_C = 1.9$. Further examination of the data revealed that only 85 children chose to use the cards. The majority of these were in Group A, thus most children in Groups B and C received a score of 0 with regard to errors on the cued recall task. Therefore another analysis was undertaken to determine if the proportion of error in cued recall was greater in Group A than in the other groups when the sample was restricted to those 85 children who actually chose to use the visual cues. There was not a significant effect of training, $F < 1$, $M_A = .12$; $M_B = .07$; $M_C = .10$.[3]

Categorical Analysis

To better understand the operation of the training, a categorical analysis was conducted on free and cued recall to

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[2]There was a marginal grade x training interaction (F (2,120) = 3.27, $p < .04$) where younger children in training group recalled more propositions incorrectly.

[3]There was a marginal three way interaction, F (2,73) = 3.88, $p < .03$, suggesting that within the control group, 7-year-old males showed higher error rates than 7 year old females who made no errors whatsoever in using the cards.

determine what kinds of information the training helped children in Group A retrieve that was not spontaneously reported by children in the control group. A series of T tests were conducted comparing the number correct on each category of information recalled by children in Groups A and C. In free recall, Group A reported significantly more information regarding the participants, $T(70.5) = 2.51$, $p < .014$, $M_A = 1.29$, $M_C = .65$. There also was a strong trend toward Group A reporting more information about conversations and affective states, $T(87.3) = 2.17$, $p < .033$, $M_A = 4.70$; $M_C = 3.31$. There were no reliable group differences on the number of propositions recalled incorrectly in free recall in any of the categories studied.

In cued recall, Group A reported significantly more correct information than the control group about the participants, $T(46.9) = 4.10$, $p < .0002$, $M_A = 1.69$, $M_C = .11$, setting, $T(46.3) = 5.34$, $p < .0001$, $M_A = 1.46$; $M_C = .09$, and conversation/affective state, $T(66.7) = 3.30$, $p < .002$. Although cued error rates did not differ among the three treatment conditions, a categorical analysis of the number of propositions recalled incorrectly in cued recall indicated that Group A recalled more incorrect information about the participants than Group C, $T(48.1) = 3.75$, $p < .0005$, $M_A = .80$; $M_C = .04$. These errors tended to involve peripheral details describing participants' clothing, jewelry and so forth.

In sum, the data could be characterized as follows: On the average, 12 additional facts were elicited as a function of the intervention; eleven of which were accurate and one of which was inaccurate. The error tended to be in response to the visual cues and was limited to peripheral details regarding the participants' clothing, jewelry, and so forth.

Conclusions

The results of this study demonstrate that completeness of eyewitness memory from 7-to-11 year olds can be increased by a relatively brief intervention that does not generate an increased rate of error and would not infringe on the rights of the accused if implemented in the forensic context as a method of preparing child witnesses. Moreover, merely instructing children in this age range to be more complete was not effective.

Although the intervention was successful in the context of this experiment, young children have been shown to have a limited ability to transfer new skills to unfamiliar situations, such as the courtroom, unless given reminders or cues (Borkowski & Cavanaugh, 1979; Schneider & Pressely, 1989, pp. 179-187). Thus, we anticipate that child witnesses would need to be reminded to use the strategies right before they begin a forensic interview or courtroom examination. While this is not a feasible approach to initial emergency interviews, comprehensive interviews are typically conducted at later dates and often there is time for preparation by the professional who conducts the interview. In

addition, advance preparation and reminders are feasible when attorneys or advocates prepare children for depositions or courtroom examinations.

While it may seem unusual for children to use visual cues to aid retrieval in front of a jury, the use of the cards at retrieval is not necessary to increase completeness of correct free recall. In fact, in free recall, 7-to-8 year olds who received the training ($\underline{M}$ = 14.08) demonstrated a mean level of completeness comparable to 10-to-11 year olds in the control group ($\underline{M}$ = 14.05). Moreover, the majority of interviews and examinations children undergo are not in front of juries in criminal cases. The use of the visual cues should be no more problematic than the use of other demonstrative tools such as dolls or drawings that are frequently used to supplement children's limited language skills.

Not to minimize children's generalization difficulties, we are currently conducting a follow up study of 24 7-year-olds to test transfer of the training effect to a new person in a different context. To increase the ecological validity of the paradigm, we hope to study the effect of the preparation technique when off duty police officers interview children using their own standard approaches about a previously staged event. Also, we plan to investigate a sample of children who more closely resemble child witnesses in motivation, and cognitive and

emotional functioning, such as allegedly abused children whose legal cases have been closed.

The goal of this presentation was to demonstrate the value of developing preparation techniques that are empirically tested and whose unintended side effects have been eliminated through revision and retesting. There is a need for continued research on preparation techniques that are relatively brief, able to be adapted for children of different ages, easily implemented by legal and mental health professionals alike, without infringing on the rights of the accused. Investigators also should strive to determine if positive effects extend beyond enhancing competence to enhancing the child's subjective experience of participating in the system. Future research in these directions would further the course of justice and simultaneously expand our understanding of the strengths and weaknesses children bring to the forensic context.

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Table 1

Definition of Training Conditions

Group A Complete training	Group B Instructions only	Group C Controls
Rapport Development	**Rapport Development**	**Rapport Development**
Draw + Metamemory rationale for use of strategies,	**Draw** ----	**Draw** ----
instructions to be complete, accurate, report beg/mid/end, avoid guessing, instances of novelty	**instructions to be complete, accurate, report beg/mid/end, avoid guessing, instances of novelty**	----
visual cue training, **watch videos**	---- **watch videos**	---- **watch videos**
recall videos with feedback, modeling strategy use, self-monitoring	answer questions about videos ---- ----	answer questions about videos ---- ----

Table 2

Number Correct and Incorrect on Free and Cued Recall Tasks by Age and Training Condition

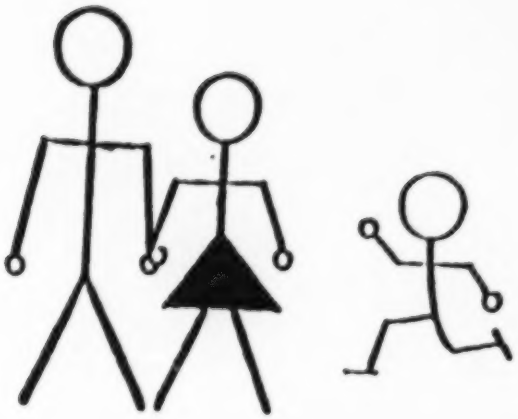
Group	n	Free Recall		Cued Recall		Total Recall	
		correct	incorrect	correct	incorrect	correct	incorrect
A	45						
M		17.12	.67	7.46	1.11	25.58	1.78
SD		9.63	1.18	7.16	1.98	12.60	2.20
B	40						
M		9.72	.33	1.47	.08	11.20	.40
SD		6.10	.61	2.79	.27	6.31	.67
C	47						
M		12.80	.40	1.76	.17	14.65	.57
SD		9.48	.97	2.85	.48	10.10	1.26

Figure 1

FIFTH GRADE VERSION

MEMORY ENHANCEMENT SIGNS

(1) "Where did it happen?"



(2) "Who was there?"

(3) "What happened?"

(4) "What were they saying and thinking?"

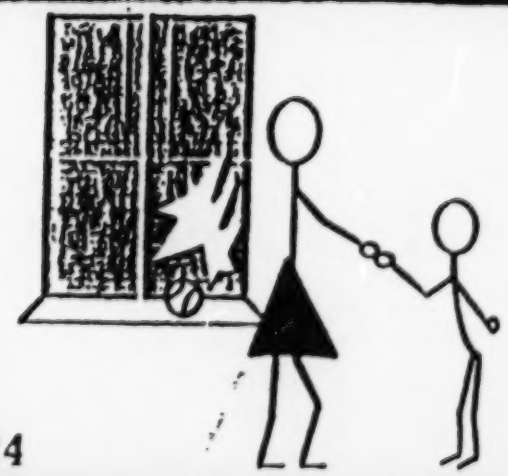


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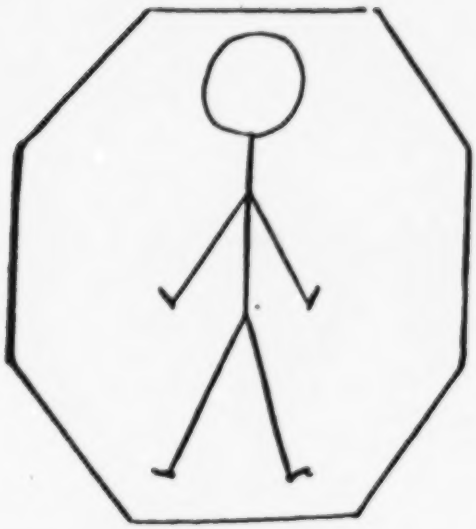
Figure 2

SECOND GRADE VERSION

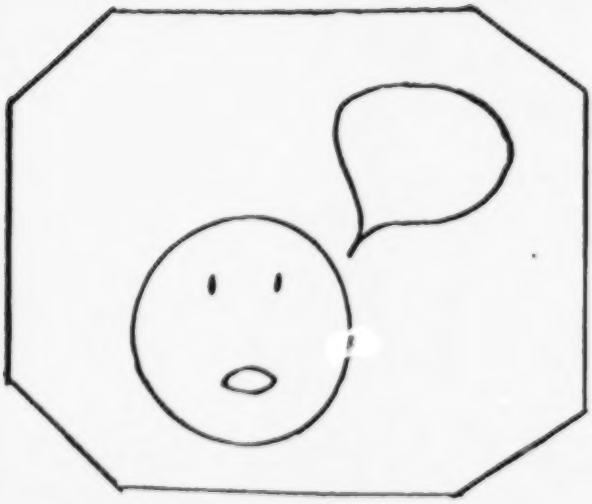
MEMORY ENHANCEMENT SIGNS



(2) "Who was there?"

(1) "Where did it happen?"

(3) "What happened?"



(4) "What were they saying and thinking?"

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